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10/633,444	08/01/2003	Michael T. Roeder	200313908-1	4688

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EXAMINER	
YUEN, KAN	
ART UNIT	PAPER NUMBER
2416	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/633,444	ROEDER, MICHAEL T.	
	Examiner	Art Unit	
	KAN YUEN	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments with respect to claims 1-23 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 7, line 5, the term “the first router” has no antecedent basis.

Claim Rejections - 35 USC § 103

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 4, 6, 7, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Request for Comments) RFC 792 J. Postel 1981, in view of Datta (Pat No.: 7269143), and further in view of Li et al. (Pat No.: 5473599).

For claim 1, Postel disclosed the method of load balancing between a plurality of routers by automated resetting of gateways, the method comprising:

receiving a packet at a first router from a source host to be forwarded to a destination host (Postel page 13). A gateway G1 receives an internet datagram from a host on a network to which the gateway is attached;

applying an algorithm at the first router to select a second router to be a next gateway for the source host for packets destined to the destination host (Postel page 13). The gateway G1, checks its routing table (applying algorithm), and obtains the address of the next gateway, G2, on the route to the datagram's internet destination network, X; and

sending an ICMP redirect message from the first router to the source host (Postel page 13). If G2 and the host identified by the internet source address of the datagram are on the same network, an ICMP redirect message is sent to the host. The ICMP redirect message advises the host to send its traffic for network X directly to gateway G2 as this is a shorter path to the destination.

However, Postel does not explicitly disclose the feature for identifying a current load on the first router; determining whether the packet is to be routed by another one of the plurality of routers based upon the identified current load of the first router; applying an algorithm to select a second router to be a next gateway for the source host for packets destined to the destination host in response to a determination that the packet is to be routed by another one of the plurality of routers; wherein the host reset the default gateway of the source host to be the second router.

Datta from the same or similar fields of endeavor disclosed the feature for identifying a current load on the first router (Datta (143) et al. see column 23, lines 35-55, fig. 4). The load information 410 on which the load balancing algorithm operates can be acquired by keeping track of the number and/or frequency of identifications of routers 110 in SYN packets. An inquiry packet can be used by the controller 202 to obtain past and current load of the routers 110;

determining whether the packet is to be routed by another one of the plurality of routers based upon the identified current load of the first router (Datta (143) et al. see column 23, lines 35-55, fig. 4). The controller balances incoming traffic based on the load information of each router 110. Thus the controller determines which router to use to route the traffic based on the load information;

applying an algorithm (fig. 4, Router Selector 406) to select a second router to be a next gateway for the source host for packets destined to the destination host in response to a determination that the packet is to be routed by another one of the plurality of routers (Datta (143) et al. see column 23, lines 35-

67, fig. 4). A more complex approach to router 110 selection may also be taken by using load information 410 together with a load balancing method implemented in the router selector 406 of the controller. Thus, there is a need for the controller to perform the algorithm (router selector 406) to select a second router in response to a determination that the current load of the current router is busy.

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the feature as taught by Datta et al. in the network of Postel. The motivation for using the feature being that it provides transmission reliability by balance the loads between routers based on current and history load information.

Postel and Datta et al. both did not explicitly disclose the feature wherein the host reset the default gateway of the source host to be the second router. Li et al. from the same or similar fields of endeavor disclosed the feature wherein the host reset the default gateway of the source host to be the second router (Li et al. column 16, lines 10-25). For example, if the active router receives a packet and decides that the optimal route is through the standby router, the active router could send redirect message to the host. This would tell the host to use the standby router, and the host would then issue an ARP request for the standby router's primary address. Thereafter the host would route packets through the standby router. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the feature as taught by Li et al. in the network of Postel and Datta et al. The motivation for using the feature being that

it shortens the routing path by bypassing transmitting packets directly to the standby router.

Regarding claim 4, Postel disclosed the feature wherein the algorithm comprises a hash function, wherein an output of the hash function returns an index of a router to be used to route subsequent packets with a same hash value (Postel page 13). The gateway, G1, checks its routing table and obtains (returns) the address of the next gateway, G2. The redirect message advises the host to send its traffic for networks X directly to gateway G2.

Regarding claim 6, Li et al. disclosed the feature of wherein the algorithm is load based, and further comprising communicating load levels amongst the plurality of routers (Li et al. see column 8, lines 45-67, column 9, lines 1-42).

Claim 7 is rejected similar to claim 1.

Regarding claim 13, Li et al. disclosed the feature wherein the apparatus is configured to communicate load levels to and receive load levels from other routing apparatus, and wherein the selection module applies a load-based algorithm (Li et al. see column 8, lines 45-67, column 9, lines 1-42).

Regarding claim 14, Li et al. disclosed the feature wherein the load-based algorithm comprises a weighted hash algorithm (Li et al. see column 8, lines 45-67, column 9, lines 1-42). In the event that two routers having the same priority are skeeing the same status, the primary IP addresses of these routers are compared and the router having the higher IP address is selected, Wherein the IP address is the weighted hash algorithm.

Regarding claim 15 and 16, although Li et al. does not explicitly disclosed wherein the selection module applies the load based algorithm comprises weighted round robin, pseudo-random algorithms, however since the weighted hash algorithm can be perform therefore the other similar types of algorithms can also be perform in similar manner.

7. Claims 2, 3, 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Request for Comments) RFC 792 J. Postel 1981, in view of Datta (Pat No.: 7269143) and Li et al. (Pat No.: 5473599) as applied to claim 1 above, and further in view of (Request for Comments) RFC 1256 S. Deering 1991.

For claims 2 and 8, Postel, Datta et al. and Li et al. did not explicitly disclose the feature wherein the algorithm comprises a pseudo-random algorithm. Deering from the same or similar fields of endeavor disclosed the feature wherein the algorithm comprises a pseudo-random algorithm (Deering page 10). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the feature as taught by Deering in the network of Postel, Datta et al. and Li et al. The motivation for using the feature being that it provides security in the system.

Regarding claims 3, 9 and 10, although Deering does not explicitly disclose the round robin type algorithm or other type of similar algorithms,

however since the pseudo-random algorithm can be perform therefore the other similar types of algorithms can also be perform in similar manner.

8. Claims 5, 11, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Request for Comments) RFC 792 J. Postel 1981, in view of Datta (Pat No.: 7269143) and Li et al. (Pat No.: 5473599) as applied to claim 1 or 7 above, and further in view of Wiryaman et al. (Pat No.: 7010611).

For claims 5, 11 and 12, Postel, Datta et al. and Li et al. did not explicitly disclose the feature wherein the hash function is a function of any combination of the IP addresses of the destination and source hosts of the packet. Wiryaman et al. from the same or similar fields of endeavor disclosed the feature wherein the hash function is a function of any combination of the IP addresses of the destination and source hosts of the packet (Wiryaman et al. column 3, lines 20-30). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the feature as taught by Wiryaman et al. in the network of Postel, Datta et al. and Li et al. The motivation for using the feature being that it provides user friendliness for packet classification.

9. Claims 17-19, 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omae et al. (Pub No.: 2004/0017775), in view of Datta (Pat No.: 7269143), and further in view of Satapati et al. (Pub No.: 2004/0215752).

For claim 17, Omae et al. disclosed method of load balancing between a plurality of routers by automated selection of a router to respond to an ARP request, the method comprising:

in a first router, receiving a packet from a requesting host for forwarding via a network (Omae et al. see paragraphs 0004-0006). A packet is transmitted from a source node to a destination node through a plurality of routers;

transmitting an address resolution protocol (ARP)request to other ones of the plurality of routers in response to a determination that the packet is to be routed by another one of the plurality of routers (Omae et al. see paragraphs 0004-0006). Among the plurality of routers between the nodes, there may be a router (router A) having an unresolved MAC address of a router to which the packet addressed to the destination node is to be routed. Thus the router A broadcasts an ARP request packet having an IP address of the router B to a link to which the router B is connected in response to determination that the MAC address of the successive router is unsolved;

in the other ones of the plurality of routers, receiving the ARP request from the first router (Omae et al. see paragraphs 0004-0006). The broadcasted ARP request packet is received by all nodes on the link;

performing the automated selection of the router to respond to the ARP request by applying an algorithm at each of the other ones of the plurality of routers to determine which single router is to respond to the ARP request (Omae et al. see paragraph 0006). The broadcasted ARP request packet is received by all nodes on the link, and the contents of the ARP request packet are analyzed.

Of the nodes on the link, the router B confirms that the router B itself is the object (destination object) of the ARP request. In other words, all nodes coupled to the link will analyze (automated selection) the content of the ARP packet, and a single node (router B) will response to the ARP packet.

However, Omae did not explicitly disclose the feature wherein identifying a current load of the first router; determining whether the packet is to be routed by another one of the plurality of routers based upon the, identified current load of the first router; and sending an ARP reply from the selected router to the requesting host.

Datta et al. from the same or similar fields of endeavor disclosed the feature for identifying a current load of the first router (Datta (143) et al. see column 23, lines 35-55, fig. 4). The load information 410 on which the load balancing algorithm operates can be acquired by keeping track of the number and/or frequency of identifications of routers 110 in SYN packets. An inquiry packet can be used by the controller 202 to obtain past and current load of the routers 110;

determining whether the packet is to be routed by another one of the plurality of routers based upon the, identified current load of the first router (Datta (143) et al. see column 23, lines 35-55, fig. 4). The controller balances incoming traffic based on the load information of each router 110. Thus the controller determines which router to use to route the traffic based on the load information.

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the feature as taught by Datta et al. in the

network of Omae et al. The motivation for using the feature being that it provides transmission reliability by balance the loads between routers based on current and history load information.

Omae et al. and Datta et al. both did not explicitly disclose the feature for and sending an ARP reply from the selected router to the requesting host. Satapati et al. from the same or similar fields of endeavor disclose the feature for sending an ARP reply from the selected router to the requesting host (Satapati et al. see fig. 2, see paragraph 0050-0052). When a host 224 sends an ARP request, the GLBP gateway device 212 sends to the requesting host 224 the vMAC address of a gateway device.

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the feature as taught by Satapati et al. in the network of Omae et al. and Datta et al. The motivation for using the feature being that it provides transmission redundancy in the system by maintaining a globe address database.

Regarding claim 18, Omae et al. disclosed the feature of forwarding a packet from the source IP address to the destination IP address (Omae et al. see paragraph 0006-0009).

Claim 23 is rejected similar to claim 17.

Regarding claim 19, Datta et al. disclosed the feature wherein the algorithm comprises a round-robin, or weight load (see column 23, lines 20-67). However, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use Hash function.

Regarding claim 21, Datta et al. disclosed the feature wherein the algorithm determines the selected router using a round robin type selection process (Datta et al. column 23, lines 20-67).

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Omae et al. (Pub No.: 2004/0017775) in view of Datta (Pat No.: 7269143), as applied to claim 19 above, and further in view of Wiryaman et al. (Pat No.: 7010611).

For claim 20, Omae et al. and Datta et al. both did not disclose the feature wherein the hash function is a function of the source and destination IP addresses. Wiryaman et al. from the same or similar fields of endeavor disclosed the feature wherein the hash function is a function of the source and destination IP addresses (Wiryaman et al. column 3, lines 20-30). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the feature as taught by Wiryaman et al. in the network of Omae et al. and Datta et al. The motivation for using the feature being that it provides user friendliness for packet classification.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Omae et al. (Pub No.: 2004/0017775) in view of Datta et al. (Pat No.: 7269143), as applied to claim 17 above and further in view of Li et al. (Pat No.: 5473599).

For claim 22, Omae et al. and Datta et al. did not disclose the feature wherein the algorithm is load based, and further comprising communicating load levels amongst the plurality of routers. Li et al. from the same or similar fields of endeavor disclose the feature wherein the algorithm is load based, and further comprising communicating load levels amongst the plurality of routers (Li et al. see column 8, lines 45-67, column 9, lines 1-42). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the feature as taught by Li et al. in the network of Omae et al. and Datta et al. The motivation for using the feature being that it shortens the routing path by bypassing transmitting packets directly to the standby router.

Examiner's Note:

Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

In the case of amending the claimed invention, Applicant is respectfully requested to indicate the portion(s) of the specification which dictate(s) the

structure relied on for proper interpretation and also to verify and ascertain the metes and bounds of the claimed invention.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAN YUEN whose telephone number is (571)270-1413. The examiner can normally be reached on Monday-Friday 10:00a.m-3:00p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky O. Ngo can be reached on 571-272-3139. The fax

phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kan Yuen/
Examiner, Art Unit 2416

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KY